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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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03/02/2000

Scott E. Moore

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EXAMINER

ELEY, TIMOTHY V

ART UNIT

PAPER NUMBER

3724

MAIL DATE

DELIVERY MODE

06/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/517,127	Applicant(s) MOORE ET AL.	
	Examiner Timothy V. Eley	Art Unit 3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 10, 11, 13-18, 22-26, 39, 41-51, 53-62, 130, 133-135, 152, 153, 163, 165-167, 177, and 179-181 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/27/08</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1-5,10,11,13-18,22-26,39,41-51,53-62,130,133-135,152,153,163,165-167,177 and 179-181.

Art Unit: 3724

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 1-5,10,11,13-18,22-26,39,41-51,53-62,130,133-135,152,153,163,165-167,177, and 179-181 is withdrawn in view of the newly discovered reference to Hungerford et al(5,172,332) and reconsideration of Obeng et al(6,048,256). Rejections based on these cited references follow.

Double Patenting

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ...". (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 1-5,10,11, and 13-18 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-7, and 10-20 of copending Application No. 11/521669. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 3724

5. Claims 1,10,11,13-15,17,49-51,54-62,133-135,152,153,165-167, and 177 are rejected under 35 U.S.C. 102(e) as being anticipated by Obeng et al(6,048,256).

- Obeng et al discloses a semiconductor processor system comprising; inherently a process chamber adapted to process at least one semiconductor workpiece using a process fluid; a connection coupled with the process chamber and configured to receive the process fluid; a sensor coupled with the connection and configured to output a signal indicative of the process fluid; a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal; wherein the sensor is configured to monitor turbidity of the process fluid; wherein the connection is adapted to couple with a process fluid supply and is configured to supply process fluid from the process fluid supply to the process chamber, and a flush system coupled with the connection configured to flush the connection with at least one of the process fluid and a rinse fluid. See figure 1, column 1, lines 28-36, column 2, lines 61-end to column 3, lines 1-5, column 4, lines 44-48, column 4, lines 57-end to column 5, lines 1-7, and column 5, lines 18-62.
- Regarding claims 10, and 49, the sensor is inherently configured to output a signal indicative of accumulation of particulate matter within the connection, since turbidity measurements inherently measure the amount of particles in a fluid.

Art Unit: 3724

- Regarding claim 11, inherently the control system is configured to process the signal to monitor processing of the at least one semiconductor workpiece within the process chamber.
- Regarding claims 13,14,133-135, and 165-167, the flush system is configured to flush the connection with at least one of the process fluid and a rinse fluid. Also, inherently the flush system is configured to flush the connection responsive to control from the control system 140(see column 3, lines 36-43). See column 4, lines 44-48.
- Regarding claim 15, the system further comprises a mixing system configured to mix plural components of the process fluid and the control system is configured to control the mixing system. See column 4, lines 16-30.
- Regarding claims 17,57, and 62, the process chamber comprises a process chamber of a chemical-mechanical polishing processor. See column 5, lines 24-33.
- Regarding claims 50 and 51, applicant's broad recitation of horizontal and vertical is met since some part of the connection is horizontal and some part of the sensor is vertical.
- Regarding claim 54, the connection comprises a connection configured to provide process fluid to the process chamber.
- Regarding claims 55 and 58, the system inherently includes a drain(which may be considered to be the connection as broadly recited) since the slurry is removed from the polishing apparatus 180.
- Regarding claims 56 and 59, the sensor is configured to monitor turbidity of the process fluid.

Art Unit: 3724

- Regarding claim 60, inherently the control system must be configured to compare the signal to a signature in order to obtain a desired semiconductor workpiece.
- Regarding claim 61, the system comprises at least one metering device configured to flow one of the components, and the control system is configured to control the metering device to control a flow rate of the component responsive to the system. See column 4, lines 22-30.
- Regarding claims 152 and 153, gravity inherently will cause accumulated particulate matter to accumulate within the connection which is arranged to transport the process fluid in a substantially horizontal direction.
- Regarding claim 177, the sensor is configured to monitor a percentage of solids present within a liquid of the process fluid to output the signal indicative of the turbidity of the process fluid, since turbidity is directly related to the percentage of solids present in a particular fluid.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 39,41-48, and 179-181 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obeng et al (6,048,256).

- Obeng et al is explained above.
- Obeng et al does not specifically disclose controlling the system by using start-up and/or halt operations.

Art Unit: 3724

- However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to flush the connection upon receiving a start-up or halt operation in order to provide a clean connection, to halt processing within the processing chamber, if the turbidity is out of specification, in order to prevent damage to the semiconductor workpiece being processed, and to control the flush system if the turbidity of the flush fluid(which may be the process fluid) is inappropriate.
- Regarding claim 47, the process fluid system is configured to supply process fluid to the process chamber.
- Regarding claim 48, the process chamber comprises a process chamber of a chemical-mechanical polishing processor.

8. Claims 2-5,16,18,22-26,130, and 163 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obeng et al(6,048,256) in view of Simms(3,713,743), or Hungerford et al(5,172,332).

- Obeng et al is explained above.
- Obeng et al does not disclose a connection that comprises a connection of a sampling system configured to provide the process fluid in a substantially static state, nor a storage device configured to store historical data corresponding to the process fluid.
- However, Simms and Hungerford et al both disclose that it is well known in the art to provide a storage device configured to store historical data corresponding to a process fluid, and to provide a sampling system configured to provide the process fluid in a substantially static state. See column 4, lines 42-49, and column 9, lines 9-22 of Simms, and the abstract of Hungerford et al.

Art Unit: 3724

- Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Obeng et al system by providing a connection that comprises a sampling system configured to provide the process fluid in a substantially static state, and a storage device configured to store historical data corresponding to the process fluid, as taught by Simms, in order to make the system more efficient.
- Regarding claims 3,4, and 18, inherently, the static process fluid must be compared with a signature(or desired amount of turbidity); and configuring the control system to control a flow rate of the process fluid into the process chamber responsive to the comparison would have been obvious to one having ordinary skill in the art at the time the invention was made, since doing so would prevent damage to the workpiece and/or provide more efficient polishing of the workpiece.
- Regarding claims 5,130, and 163, it would have been obvious to one having ordinary skill in the art at the time the invention was made to halt processing within the processing chamber responsive to comparison, if the process fluid is out of specification, in order to prevent damage to the semiconductor workpiece being processed.
- Regarding claim 18, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the system by providing a sensor coupled with the sampling system and configured to output a

Art Unit: 3724

signal indicative of the sample of the process fluid, since Obeng et al discloses that a sensor system 190 must be used to collect data. See column 4, lines 57-65.

- Regarding claim 22, the sensor is configured to monitor a percentage of solids present within a liquid of the process fluid to output the signal indicative of the turbidity of the process fluid, since turbidity is directly related to the percentage of solids present in a particular fluid.
- Regarding claim 23, it would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the control system to control the sampling system to draw the sample of the process fluid, in order to maintain efficiency of the system.

9. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Obeng et al ((6,048,256) in view of Adams et al(5,755,614).

- Obeng et al is explained above.
- Obeng et al does not disclose a recirculation system configured to recirculate process fluid within the connection and wherein the control system is configured to control the recirculation system responsive to monitoring the accumulation.
- However, Adams et al discloses a recirculation system configured to recirculate process fluid within the connection and wherein the control system is configured to control the recirculation system responsive to monitoring the accumulation. See figure 2, column 1, lines 12-14; column 6, lines 58-end to claim 7, lines 1-10, column 7, lines 17-31, and column 7, lines 44-53.

Art Unit: 3724

- Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Obeng et al system by providing a recirculation system configured to recirculate process fluid within the connection and wherein the control system is configured to control the recirculation system responsive to monitoring the accumulation, as taught by Adams et al, in order to reuse the process fluid.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy V. Eley whose telephone number is 571-272-4506. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer D. Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3724

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Timothy V Eley/
Primary Examiner, Art Unit 3724

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